Rotation.—Heald states that mixed and overlapping rotations were found in Meifa and Asfal al 'Ain but, from careful enquiries, the following appeared to be the most popular:—Lucerne two years, followed by millet and the fourth year tobacco. If tobacco was not sown, the land was planted with another variety of millet. In some villages where lucerne was not grown, the rotation simply included tobacco and millet with sesame the third year. 242

In the Wadi Maseila the fields are constantly changed. One year a certain part of the wadi bed will be cultivated, stick huts and erections for drawing up the water built, and when the crop is harvested the Beduins move on elsewhere, returning again another season. Thus we frequently passed remains of cultivation, disused mud aqueducts and tumbled-down huts.

Diseases.—Heald states, "Excepting for the caterpillar attacking the young millet and tobacco, the crops were remarkably free from pests and disease; I carefully searched for stem borer in the millet but could find none, and also for the scale in the few citrus trees."

Trees and other vegetation of economic importance.

The *'elb* (*Sidr. Zizyphus Spina-Christi*, L.) has many uses. Apart from its blossoms, which are said to give the good taste to the Du'an honey, its fruit called *dōm* is eaten extensively by the Beduins when dates are lacking. The beams, pillars and doors of Hadhramaut houses are made from the timber, and the supply and carriage of the trunks give much employment to the Beduins. It also supplies good firewood. It is a fodder tree, and the leaves are also used as a substitute for soap. 137 262 313 242 [388]

Sār, a palm tree (*Hyphaene thebaica* (L.) Mart.), from which the Beduins gather the leaves called *sāf* for transport to the towns, where they are made into mats, baskets, country string, etc. A popular drink called *nebīdh* is also procured from this tree. 137 314 285 272

The long-thorned *sumr* (*Acacia spirocarpa* Hochst.) is perhaps the commonest tree in the Hadhramaut. It is a popular fodder for camels and is likewise eaten by goats. It supplies good firewood and a substance taken from the roots called *futukh* is used by fishermen for greasing their lines in order to make them strong. Another thorny tree, the *geradh* (*Acacia senegal* Willd.), is also a common fodder. Its leaves are used for tanning skins and it is said that the Beduins make a drink from them which they liken to tea. 137 246 314 372 272

The *musht* tree (*Grewia erythraea* Schweinf.), is used extensively for firewood and camel fodder. The leaves of the *ariata* tree (*Conocarpus erectus* Jacq.), which grows in the Wadi Maseila where it sometimes reaches a height of 50 to 70 feet, are dried for fodder, and the timber probably has its economic uses. I was told in Tarim of a large tree growing in Wadi Maseila the strong wood of which is used by carpenters; this may have been the *ariata*. 137 314 246 372

60

137 *Rakh* (*Salvadora persica* L.) is a very popular fodder with camels
314 and is found in abundance in the Wadi Maseila; it is also fairly
246 common round Du'an but practically non-existent to the north of Shibam. Goats do not eat it. It provides the Beduins with their favourite toothsticks.

Khuwcira, a small plant (*Cleome [illegible]ata* Coll.), is very popular with both camels and goats. There are of course many other plants on which they graze.

Manufacturing Industries.

496 Minor Industries include the extraction of simsim oil with camel
262 mills. In Mukalla there is a large oil factory with 31 compart-
249 ments in each of which a camel turns the usual primitive wooden machinery for expressing the oil from sesame seed. The oil extracted by this primitive process is much more popular for food that that extracted by modern machinery. It is considered much
[231] sweeter. The residue forms a cake which is fed to camels.

339 There are kilns for lime-burning immediately to the east of
438 Mukalla and in many other places. In particular most excellent
353 lime is made in Seiyun and Tarim. This is applied as a plaster to the interiors of the houses and polished with smooth flints till it resembles marble.

28 Hides from the interior are tanned in Mukalla but none is exported. At Gheil ba Wazir I saw a leather-worker using Mukalla-tanned skins. Skins are also tanned in Shibam. The dyeing of cloth, weaving, and mat-making are other minor industries. Shihr in particular is well known for its beautiful
323 weaving. There are potteries in many places, and I saw the process
326 in Gheil ba Wazir. There are also good workers in silver at Gheil ba Wazir, Shihr and Mukalla.

Fisheries.

228 The manufacture of fish fodder and manure and the preparation
251 of dried fish is a large industry of the coastal area. From an
262 export point of view, fish products come third in importance. They
231 are :—

438 *Sifa* (fish oil). Not much of this is made in either Mukalla or Shihr. The bulk is imported from the Mahri coast.

Wazīf (dried *'aid* and other small fish). A great quantity of this is prepared in Mukalla and still more in Shihr. The sea is alive with these small fish, the catching and preparing of which gives work to many hundreds of fishermen. In both Mukalla and Shihr there are godowns for these fish which are stored before being taken to the interior for manure, camel fodder, or human consumption. The very small *'aid* fish are used for manure only, but the larger ones are eaten uncooked

8: Pike N-4 (no date) 1940 MM2 Hadhramaut MM2

Himyarites was an important export center for incense and myrrh, has enough rainfall to support a thin growth of vegetation, largely incense trees. From this area and the surrounding country, at one time more abundantly watered, the priceless gum was most extensively collected in the past. It is still gathered today in small amounts, according to demand. The gum, which adheres to the bark, is har-

FIG. 20—Caravan loading. The three men at the right are arguing about the disposition of loads.

vested from varieties of the Burseraceae family, *Boswellia Carterii* and *B. Bhua-Dajiana*, divided by the Arabs into four grades.[4] Its value, which ranges from £80 to £10 a ton, depends on such qualities as color (red, green, and brown), size of the gum particles, and degree of adulteration. Just as the rubber gatherers of the Amazon debased latex with pebbles and gravel, so did the Arabs in the heyday of the incense trade, and to some extent even now, admix varying amounts of fine sand with the gum to increase its weight. Between March and August the trees are tapped by knife incision and a milky juice is extracted, which dries in three to five days.

Besides incense trees, a thin and scattered growth of bunch grass, camel's-thorn, and a cedarlike evergreen abundant in some dry wadies is found in the Hadhramaut. Date-palm groves, which cover many square miles, are mainly dependent on irrigation.

SOURCES OF WATER SUPPLY

In addition to artesian water and the water obtained from wells, other sources of supply are available. One of these is the *siquaya*, a small, rectangular, concrete tank with a capacity of 20 or 25 gallons erected along caravan routes near towns and maintained by them as a public service. Another is the well or cistern excavated at the base

[4] Freya Stark: The Southern Gates of Arabia. [New York], 1936, pp. 10–11.

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

water is too far below the surface to serve for the regular irrigation of a plantation, the *nibq* can still live quite well, and even if there is no rain for some years it does not die. The fruit of the *nibq* is as large as a marble and has a stone of the size of a pea. The taste is sour-sweet and refreshing. The fruit can be dried and kept for a long time: it is then crushed fine, stone and all, and with the meal bread is baked or a sort of porridge made. This small fruit is the chief food supply of many in times of drought, and in times of scarcity many Bedouins live on *nibq* and milk and do not look ill on the diet. The shepherdesses carry the *nibqs* with them in small oval, prettily woven baskets.

The wood of the *nibq* tree is reddish-brown and hard, and is used for beams and supporting pillars in the big, many-storied, mud houses of the rich. The branches, thick with thorns, are used in the date plantations when the bunches of dates approach ripeness. They are bound in a wreath round the trunk just below the clusters of fruit, to prevent the dates from being stolen. Finally the green leaves of the *nibq* are also useful: when, during a long drought, there is hardly any more food to be found for the sheep and goats one sees the agile shepherdesses, in spite of their flowing, black garments, clambering up to the top of the *nibq* tree and knocking off the leaves from the branches with long, thin sticks. The flock stands below the tree in expectation of the godsend of food to come. We have only a mild admiration for the *nibq* fruit: one must do much chewing for little nourishment and for little taste.

They also brought us from el-Ḥisī a few handfuls of the roasted larvae of white ants. The taste was not bad; Von Wissmann ate up a whole helping with the result that, shortly afterwards, he had a pain in his throat and could not utter a sound, a condition that lasted for about two hours.

El-Ḥisī lies about 4500 feet above sea-level, and the evenings are quite cold. While there, we examined the bundles of plants which we had already collected and pressed. Great

H 439 214 Two products of southern Arabia are frankincense and myrrh, which are both obtained from the sap of trees that grow on the damper hill slopes above 3,000 feet. The sap is collected in late spring and early summer, before the onset of the rains, mainly by migrant Somalis and other Africans. At one time there was a considerable trade in these products with the north, and tradition speaks of an 'Incense Route' somewhere in south-west Arabia, along which caravans moved northwards to Medina and the Levant. Nowadays the output of frankincense and myrrh is very much smaller, most coming from the uplands of Dhofar.

H 226 Towards the east, as relief declines and rainfall diminishes, cultivation becomes more and more precarious, and fishing is the main occupation. Large quantities of shark, tunny, and sardines are caught (Chapter X), most of which are dried as food both for humans and for camels. In addition, an oil is prepared from the fish for use in woodworking. Mukhala and Shihr are the chief fishing centres, and in these towns rows of fish drying in the sun for food, and rotting in heaps to produce oil, are prominent, and according to some visitors, unforgettable, features.

H 439 With a barren hinterland, many activities in southern Arabia centre on the sea; and, in addition to fishing, trading by dhow is important. The Arabs of the south are the Greeks of the Indian Ocean, and cargoes are carried between East Africa, Arabia, the Persian Gulf, and India—even, at times, the East Indies. From their sea-trading, the natives of Aden and the Hadhramaut derive a livelihood that allows the import of foodstuffs into the country—as it is, local production of food is quite insufficient to maintain the existing population, and part must come from the outside. A cosmopolitan outlook, and wide commercial contacts, strongly contrasting with conditions in the Yemen, are strikingly indicated by the architectural styles in southern Arabia, which are very greatly influenced by East Indian models. Many storied houses, with elaborate woodwork and carving, are most characteristic. After a life of trading, perhaps with many years spent away from his country, the southern Arab often returns to Aden or the Hadhramaut with a small fortune that will keep him in comfort for the rest of his life.

H 177 A 504 Aden is the principal town of the region, and its harbour, the only good one along the entire coast, from Bab el Mandeb to Muscat, is formed by a deep bay partially enclosed by two volcanic necks. The town, of 40,000 inhabitants, owes its development to British

5:Gt. Brit. . Colonial Office G-3 (1947) 1949 MM1 Aden
Hadhramaut MM2

November. They began testing fish livers for vitamin-A content and also canning samples. Meanwhile several local merchants showed interest and applied for permission to set up canneries and the like. A board to consider such applications and fisheries development in general was set up.

FORESTRY

No true forests exist. Bush products exploited are timber, fuel, charcoal, fibres, gum incense and dragon blood.

Chapter 8: Social Services

EDUCATION

General

Education in common with other services is under the immediate general guidance of the British Agents. The Aden Government Department of Education inspects schools, gives such advice and assistance as is required, and co-ordinates so far as is possible educational development throughout the whole territory.

Policy

The general education policy in the Protectorates has been to build up self-supporting state Departments of Education as the states become sufficiently advanced for this to be possible. The intention has been that these departments should organise and control a system of village schools, central primary schools and, in the case of the larger states, intermediate schools.

Education Departments

Two such Education Departments are already in existence. One under the Mukalla Government in the Eastern Protectorate, with a Sudanese Director of Education (who is also Education Adviser to the British Agent), and an inspectorate of five local Arab inspectors. The other is at Lahej, 25 miles inland from Aden in the Western Protectorate, where Emir Ali, brother of the Sultan, performs the duties of Director of Education.

Higher Education

There is no higher education in the Protectorate, and there is no likelihood of full secondary education for some years to come. It is thus necessary to send abroad selected scholars who reach the required standard. There is at present one boy at Gordon College in the Sudan, and three there are at secondary schools.

30: Gt. Britain G-5 (ca. 1918) 1920 MJ1 Saudi Arabia
Hadhramaut MM21

Spinning, weaving, and dyeing are also common industries. Cotton is spun into thread by hand-spindles and then woven in hand-looms, and sometimes machine-made yarns or twists are used in the same way; the looms are of the very simplest construction. The industry is still carried on to a small extent at Aden, and somewhat more extensively at a few centres in the interior, notably at Nisāb and Markhah, which are situated in the cotton and indigo growing district of the 'Aulaqi country; here a large amount of cotton fabrics for tribal shawls and turbans is made. The stuffs, when required, are dyed with locally prepared indigo. Sauma'ah, a town in the Beida country, is famous for a special make of goat-hair carpets.

Charcoal burning is an industry carried on at several places in the interior, among the wooded slopes of the hilly districts. Potash is also manufactured from a product known as 'Aden balsam'; this is not found in any quantity in Aden itself, but is prepared in the 'Abdāli and Fadhli districts. The balsam is thrown into small pits about two feet wide and one deep, and wood is added; the mass is then set fire to, and as the sap exudes from the plant it mingles with the ashes; the mixture is stirred and allowed to cool; then it is dug up and sent into Aden on camels, for sale. The price is about 8 annas per maund of 28 lb., and the potash is exported to Bombay for washing purposes. A primitive form of distilling is also in vogue, the natives producing a liquor from dates which have been placed in water and allowed to disintegrate. The industry is carried on at Aden (under certain restrictions) and other places.

Trade

Practically the whole of the trade of this region is centred in Aden—local trade as well as general. The trade of the only other notable port of this littoral, Shūghrah (and even that of Makalla in Hadhramaut), is restricted and purely local in character, and is entirely subservient to that of Aden.

The total value of the trade of Aden (import and export), in round numbers, for the last two years has been:

1913–14	£8,530,000
1914–15	£6,940,000.

This falls into two categories: Transhipment trade, and Inland (or local) trade. Comparative figures for the year 1914–15, were:

Transhipment	£6,682,000
Inland	£258,000.